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(54) Title: POLYMER

(57) Abstract: The present invention relates to new semiconductive oligomers and polymers, a process for their manufacture and their use in thin film electronic and optical devices, such as organic light emitting diodes (OLED) and photovoltaic devices, e.g. solar cells and photodetectors.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/006721

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C08G61/02 C07C25/22 H01L51/30 C07C1/20 C07C1/24

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08G C07C H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, BEILSTEIN Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PLUMMER B F ET AL: "STUDY OF GEOMETRY EFFECTS ON HEAVY ATOM PERTURBATION OF THE ELECTRONIC PROPERTIES OF DERIVATIVES OF THE NONALTERNANT POLYCYCLIC AROMATIC HYDROCARBONS FLUORANTHENE AND ACENAPHTHOL[1,2-k]FLUORANTHENE" JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 115, 1993, pages 11542-11551, XP002271035 page 11542; figure I page 11544, right-hand column, last paragraph ----- -/-/	8-10

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

18 October 2004

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Name and mailing address of the ISA

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International Application No  
P/EP2004/006721

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HARVEY R G ET AL: "NEW SYNTHETIC APPROACH TO POLYCYCLIC AROMATIC HYDROCARBONS AND THEIR CARCINOGENIC OXIDIZED METABOLITES" JOURNAL OF ORGANIC CHEMISTRY, vol. 65, no. 13, 2000, pages 3952-3960, XP002271036 Page 3954; Scheme 3; Compound 15 -----	8
A	MÜLLEN K ET AL: "BRIDGING THE GAP BETWEEN POLYFLUORENE AND LADDER-POLY-p-PHENYLENE: SYNTHESIS AND CHARACTERIZATION OF POLY-2,8-INDENOFLUORENE" MACROMOLECULES, vol. 33, 2000, pages 2016-2020, XP002271037 cited in the application the whole document -----	1-19
A	WO 00/53656 A (TOWNS CARL ROBERT ;DELL RICHARD O (GB); CAMBRIDGE DISPLAY TECH (GB) 14 September 2000 (2000-09-14) cited in the application abstract -----	1-19
A	WO 00/22026 A (KREUDER WILLI ;AXIVA GMBH (DE); BECKER HEINRICH (DE); SPREITZER HU) 20 April 2000 (2000-04-20) the whole document -----	1-19

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/006721

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-19

#### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-19

An oligomer or polymer comprising an optionally substituted first repeat unit of the formula Ir.

An optionally substituted monomer of the formula Im.

A process for preparing an oligomer or polymer comprising the step of oligomerising or polymerising a monomer of the formula Im.

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2. claims: 20-24

A method of forming an optionally substituted compound of the formula I comprising the steps of eliminating leaving groups from the optionally substituted compound of the formula Ip.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

P/EP2004/006721

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
WO 0053656	A 14-09-2000		AU 2926400 A CA 2362459 A1 CN 1343225 T EP 1165648 A1 WO 0053656 A1 JP 3310658 B1 JP 2002539287 T US 2002095017 A1 US 6353072 B1	28-09-2000 14-09-2000 03-04-2002 02-01-2002 14-09-2000 05-08-2002 19-11-2002 18-07-2002 05-03-2002
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WO 0022026	A 20-04-2000		DE 19846766 A1 AU 5743699 A CN 1330670 T DE 59908822 D1 WO 0022026 A1 EP 1123336 A1 JP 2002527553 T US 6653438 B1	20-04-2000 01-05-2000 09-01-2002 15-04-2004 20-04-2000 16-08-2001 27-08-2002 25-11-2003
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